CLAIMS

What is claimed is:

1. A method for determining a signal-to-interference ratio (SIR) of data signals based on a data demodulator output, the method comprising:

(a) receiving demodulated symbols from the data demodulator output;

(b) estimating the average signal power of the demodulated symbol as a function of a median based average power value m_d and a mean based average power value m_e of the symbols for each quadrant of a quadrature phase shift keying (QPSK) constellation;

(c) estimating the average effective interference power of the symbols; and

(d) calculating the SIR by dividing the estimated average signal power of the symbols by the estimated average effective interference power of the symbols.

2. The method of claim 1 wherein the function of the median based average power value and the mean based average power value is a minimum value function for determining a minimum value m between the median based average power value and the mean based average power value.

3. The method of claim 2 wherein the average signal power is equal to the magnitude squared of the minimum of the absolute value of the median value and the absolute value of the mean value averaged over all of the quadrants.

4. The method of claim 1 wherein the data signals include demodulated data symbols.

5. The method of claim 4 wherein the data symbols are included in a burst of a dedicated physical channel (DPCH).

6. The method of claim 4 wherein the data symbols are quadrature phase shift keying (QPSK) data symbols.

7. The method of claim 4 wherein the data symbols are binary phase shift keying (BPSK) data symbols.

8. The method of claim 1 wherein step (b) further includes performing the following calculation: $E\left\{\left|S_k^d\right|^2\right\} = \left|\min\left(\left[\frac{1}{4}\cdot\sum_{i=1}^{4}\left|median(y_k(Q_i))\right|\right], \left[\frac{1}{4}\cdot\sum_{i=1}^{4}\left|mean(y_k(Q_i))\right|\right]\right)\right|^2$

wherein S_k^d is the k-th demodulated QPSK signal, i denotes the quadrants of the QPSK constellation, and $mean(y_k(Q_i))$ and $mean(y_k(Q_i))$ denote the median and mean values, respectively, of the symbols in the i-th quadrant Q_i.

9. The method of claim 8 wherein step (c) further includes performing the following calculation: $E\left\{\left|n_k^c\right|^2\right\} = \frac{1}{4}\left\{\sum_{i=1}^{4}\frac{1}{N_{Q_i}}\sum_{k=1}^{N_{Q_i}}\left|y_k(Q_i) - q_i\cdot\sqrt{E\left\{\left|s_k^d\right|^2\right\}}\right|^2\right\}$ wherein $\sqrt{E\left\{\left|s_k^d\right|^2\right\}}$ is regarded as the average signal amplitude and $q_1 = \frac{1+j}{\sqrt{2}}, q_2 = \frac{-1+j}{\sqrt{2}}, q_3 = \frac{-1-j}{\sqrt{2}}, q_4 = \frac{1-j}{\sqrt{2}}$.

10. The method of claim 9 wherein step (d) further includes performing the following calculation:

$$SIR = \frac{\left|\min\left(\left[\frac{1}{4}\cdot\sum_{i=1}^{4}\left|median(y_k(Q_i))\right|\right], \left[\frac{1}{4}\cdot\sum_{i=1}^{4}\left|mean(y_k(Q_i))\right|\right]\right)\right|^2 - C}{\frac{1}{4}\cdot\left\{\sum_{i=1}^{4}\frac{1}{N_{Q_i}}\cdot\sum_{m=1}^{N_{Q_i}}\left|y_m(Q_i) - q_i\cdot\sqrt{E\left\{\left|s_m^d\right|^2\right\}}\right|^2\right\}}$$

where $$C = \left| \left[\frac{1}{4} \cdot \sum_{i=1}^{4} \left| median(y_k(Q_i)) \right| \right]^2 - \left[\frac{1}{4} \cdot \sum_{i=1}^{4} \left| mean(y_k(Q_i)) \right| \right]^2 \right|.$$

11. The method of claim 1 further comprising calculating a correction term C wherein C = $|m_d - m_e|^2$.

12. A method for determining a signal-to-interference ratio (SIR) of a sequence of data bits, the method comprising:

(a) receiving the data bits;

(b) estimating the average signal power of the bits as a function of a median based average power value m_d and a mean based average power value m_e of the bits;

(c) estimating the average effective interference power of the bits; and

(d) calculating the SIR by dividing the estimated average signal power of the bits by the estimated average effective interference power of the bits.

13. The method of claim 12 wherein the function of the median based average power value and the mean based average power value is a minimum value function for determining a minimum value m between the median based average power value and the mean based average power value.

14. The method of claim 13 wherein the average signal power is equal to the magnitude squared of the minimum of the absolute value of the median value and the absolute value of the mean value averaged over all of the quadrants.

15. The method of claim 12 further comprising calculating a correction term C wherein C = $|m_d - m_e|^2$.